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**From:** Elizabeth Erwin [Erwin.ElizabethLNDU@usepa.onmicrosoft.com]  
**Sent:** 4/26/2011 5:05:00 PM  
**To:** NCEA ALL  
**Subject:** NEWS UPDATES: Study Raises Doubts On Health Basis For EPA's Proposed Perchlorate Rule (Risk Policy Report)

# Study Raises Doubts On Health Basis For EPA's Proposed Perchlorate Rule

Posted: April 25, 2011

A recent study into the effects of low-level environmental perchlorate exposure on pregnant women and their children finds no health effects -- raising questions about EPA's recent determination that the presence of perchlorate in drinking water causes a public health concern necessitating a first-time drinking water standard for the chemical.

Conducted by researchers at Boston University, the University of Southern California and hospitals in Cordoba, Argentina, the new study raises questions about the health effects EPA is intending to protect against. "Low-level perchlorate exposure is ubiquitous, but is not associated with alteration in thyroid function tests among women in the first trimester of pregnancy," the study concludes.

Perchlorate, a component of rocket fuel that also occurs naturally in some soils and fertilizers, can inhibit the thyroid's uptake of the essential nutrient iodine. Iodine deficiency of sufficient severity and duration can lead to goiter, developmental delay and IQ loss. As a result, EPA and the National Academy of Sciences in their risk assessments focused on pregnant women and their fetuses as the most susceptible populations to study.

EPA Administrator Lisa Jackson, at the urging of Sen. Barbara Boxer (D-CA), announced in February that the agency has determined that perchlorate poses public health risks that can be mitigated by a drinking water controls and the agency is launching a rulemaking for a drinking water standard (*Risk Policy Report*, Feb. 8).

The study, whose lead author is Elizabeth Pearce, a professor at Boston University's School of Medicine, considers two cohorts of pregnant women in their first trimester, including 134 women in Los Angeles and 107 in Cordoba, Argentina.

The study is a follow-up to work that Pearce published with co-authors in 2010 focusing on 1,600 pregnant Welsh and Italian women that reached the same conclusions. Pearce's 2010 study, which compared thyroid hormone levels with perchlorate levels in the women, remains the largest conducted of pregnant women's exposure to perchlorate (*Risk Policy Report*, May 18).

"If we find [similar] results in a few different cohorts [that will be] reassuring," Pearce said of performing the research in multiple populations of pregnant women. "We're trying to internally confirm" our conclusions, she said in an interview with *Risk Policy Report* April 8.

The new study, published in the journal *Endocrine Practice* in February, is part of Pearce's followup work to her 2010 study. The results contradict those of Center for Disease Control & Prevention researcher Benjamin Blount, whose 2006 study examined data from 1,111 women -- most were not pregnant -- and found the body's thyroid hormone regulation pattern was disturbed in 36 percent of women with low iodine levels as a result of perchlorate exposure (*Risk Policy Report*, Oct. 10, 2006).

Both Pearce's 2010 and 2011 studies suggest that pregnant women, even those with low iodine levels, are not affected by their exposure to low levels of perchlorate.

"I still don't know why the discrepancy," Pearce said of the contradiction between her conclusion and that of Blount's. But she notes in her 2011 paper that, "It is difficult to reconcile the present negative findings and those from Europe with the adverse affects of environmental perchlorate on thyroid function reported previously in the study by Blount et al."

An EPA spokesman did not return a request for comment by press time. But this discrepancy was also highlighted at the February Senate environment committee hearing where Jackson announced that EPA will regulate perchlorate in drinking water. Jackson described perchlorate as "a toxic component of rocket fuel. It is not naturally occurring. It can cause thyroid problems and may disrupt the normal growth and development of children in the womb."

But Linda Birnbaum, the director of the National Institute for Environmental Health Sciences (NIEHS) who also testified at the hearing, noted the discrepancy in the existing published literature on perchlorate, and she cited both the work of Blount and Pearce in her written testimony.

Birnbaum noted that there is conflicting evidence in the scientific literature regarding whether perchlorate causes adverse effects in exposed humans. She indicated a need for greater study of the chemical's risks to specific groups that may be more susceptible to perchlorate exposure (*Risk Policy Report*, March 8).

"[T]o date, human studies on environmental exposure to low levels of perchlorate have been inconsistent," according to Birnbaum's Feb. 2 written testimony. "Further research is required to determine if there are effects on vulnerable groups such as low birth weight or preterm infants, or whether maternal perchlorate exposure (with or without low dietary iodide intake) causes neurodevelopmental outcomes in infants."

Pearce's latest study indicates that "it is reassuring that low level perchlorate exposure in first trimester pregnant women does not affect thyroid function in this and previous studies. However, infant and childhood development in relation to maternal thyroid function and exposure to perchlorate and other potential thyroid disruptors await further study."

Pearce called this the "\$164,000 question. The concern about perchlorate is still very much unresolved. There is concern because exposure is ubiquitous and a very broad population could be at risk . . . we know that thyroid hormones are so critical for development, even a subtle lowering of a child's thyroid hormone could affect IQ."

Research that could conclusively answer the question is "very difficult to do" because it is not possible to expose people, especially pregnant women to perchlorate. Instead, "exposure has to be observed and there are 100 million confounders because a lot of things affect IQ and because we're looking at very subtle changes," Pearce said.

Pearce is pursuing additional research, including what she describes as a similar study of pregnant women in Greece and Georgia. And she is also working on a study of breast-feeding mothers and infants. -- *Maria Hegstad*

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